PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

MCCURDY

Appln. No.: 09/662,181

Confirmation No.: 2443

Filed: September 14, 2000

Docket No: L10389

Group Art Unit: 1762

Examiner: Bret P. Chen

For: METHOD FOR DEPOSITING TITANIUM OXIDE COATINGS ON FLAT GLASS

THIRD SUPPLEMENTAL DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Richard J. McCurdy, hereby declare and state:

1. I am the same Richard J. McCurdy as identified in the Declaration Under 37 C.F.R 1.132 (hereinafter "my original Declaration") filed in the above-referenced Application on June 20, 2003, as well as the Supplemental Declaration Under 37 C.F.R. § 1.132 (hereinafter "my supplemental Declaration") filed in the above-referenced Application on March 1, 2004, and the Second Supplemental Declaration Under 37 C.F.R. § 1.132 (hereinafter "my second supplemental Declaration") filed in the above-referenced Application on July 30, 2004.

2. I have reviewed the Final Office Action dated October 18, 2004, issued in connection with the above-referenced application, the Amendment Under 37 C.F.R. § 1.116, and the Advisory Action dated March 30, 2005.

3. I have also reviewed my previous declarations filed in this Application, that is, my original Declaration, my supplemental Declaration and my second supplemental Declaration, and incorporate them into this Declaration by reference.

4. The above referenced Application describes a method that includes manufacturing a continuous glass float ribbon having a first major surface and an opposite major surface defined as a second major surface, the first major surface having tin diffused therein characteristic of forming the glass float ribbon on a molten tin bath. It further describes and claims a chemical vapor deposition coating apparatus positioned over the surface of the float ribbon at a point in the manufacture of the float ribbon where the temperature is from about 590° to 715°C (1100° to 1320°F). Titanium tetrachloride in a carrier gas stream is directed through the chemical vapor deposition apparatus over a surface of the float ribbon, and the float ribbon is annealed to produce a coating over the glass float ribbon.

5. Carrying out the process described in the immediately preceding paragraph 4 would inherently result in a crystalline coating layer over the glass float ribbon that is photocatalytically activated. Further, one skilled in the art would recognize that a photocatalytically activated, crystalline coating layer would inherently result. This is because the deposition conditions and temperature ranges are those recognized in the art to produce crystalline TiO2 (predominately anatase or anatase/rutile mixtures). Also, crystalline TiO2, especially anatase rich TiO2 is photocatalytically active. See, my previous declarations identified in paragraph 1 above, and Table 4 of U.S. Patent No. 6,722,159, especially Groups III and IV.

(A copy of the '159 Patent is enclosed as Attachment A.) Therefore, one skilled in the art would recognize that a photocatalytically active crystalline layer would result.

6. A coating that is crystalline and photocatalytically activatible is a necessary result of the chemical vapor deposition of titanium dioxide on a glass float ribbon followed by annealing of the ribbon, as recognized in the '159 Patent (copy enclosed as Attachment A). This patent describes a method for producing a layer of titanium dioxide in the crystalline phase over a glass float ribbon, the layer of titanium dioxide being a photocatalytically-activatable, self-cleaning coating that the patentee asserts is capable of having a photocatalytically-activated self-cleaning reaction rate of at least about 2×10^{-3} cm^{-1} min^{-1} upon exposure to ultraviolet radiation. The method includes the steps of positioning a chemical vapor deposition coating apparatus over a tin bath containing a glass ribbon having a temperature of at least about 400°C. (752°F.), directing a titanium dioxide precursor through the chemical vapor deposition apparatus over a surface of the heated glass ribbon, and annealing the glass ribbon. The '159 uses a variety of deposition technologies to produce a TiO2 coating: high temperature CVD process (1200°F), medium temperature CVD process (900°F), and spray pyrolysis. In the high temperature CVD process, which utilizes a deposition temperature that is within the range of deposition temperatures referred to in paragraph 4 above, the coatings were found to be photocatalytic and predominately anatase under the vast majority of conditions. For the medium temperature CVD process (900°F), the coatings had low photocatalytic activity as deposited or were made photoactive by heating to a higher temperature to induce and/or further develop the crystalline

structure of the coatings. Annealing coatings at temperatures above the deposition temperature is a common method to induce or further develop the crystallinity of the film.

7. Depositing a TiO_2 film at about 1200°F or annealing it to near 1200°F post deposition results in a crystalline TiO_2 film which is photoactive. The processes described in paragraph 4 above deposits at this temperature such that a further high temperature annealing step is unnecessary and a crystalline photoactive TiO_2 film results.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: Oct 18, 2005

Richard J. McCurdy, Ph.D